

OPERATING EXPERIENCE WEEKLY SUMMARY

Office of Nuclear and Facility Safety

July 10 - July 16, 1998

Summary 98-28

Operating Experience Weekly Summary 98-28

July 10 through July 16, 1998

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EVENTS

1. ACCESS CONTROL DEFICIENCIES IDENTIFIED AT PAJARITO

On July 8, 1998, at the Los Alamos National Laboratory Pajarito Laboratory, operators energized the Planet assembly (used for criticality experiments) while a security guard was in a radiological controlled area. The control room for the Planet assembly is located in another building to allow remote operations. An operator immediately shut down the assembly when the guard entered the control room and gained his attention. Investigators determined that a crew chief failed to notice the guard inside the area when he secured a railroad gate and believed that the guard had exited the area. They also determined that experimenters were performing a subcritical experiment, the security guard did not receive any radiation exposure, and the railroad gate boundary may be an intermittent high-radiation area. Failure to perform adequate area sweeps and control access to radiological areas during radiation-producing operations could result in personnel exposures. (ORPS Report ALO-LA-LANL-TA18-1998-0007) Investigators determined that the security guard secured the Planet assembly building after the crew chief, an instructor, and a student prepared it for the experiment. They determined that the security guard secured the security boundary following experiment preparation. They also determined that the crew chief, a crew member, and the student performed area sweeps to ensure that no personnel were present inside the security boundary. The crew chief then left to park his car while the crew member swept another building. The crew chief and crew member met at the railroad gate and secured it, believing that the guard had exited while they performed other tasks. Investigators determined that the security guard saw the crew chief close the railroad gate; he sounded the truck horn to attract attention, but no one heard him. The guard passed under the railroad gate, and walked to the control room, and asked the operator for permission to retrieve his truck from the area. Operators had already energized the Planet assembly.

The facility manager held a critique of the event. Critique members learned that there was a temporary shield present on the road, inside the radiological control area beyond the railroad gate, and it may have contributed to the inability of the crew chief to see the guard. They also learned that no procedures or logs ensure that personnel are not inside areas when radiation-producing devices are operated (including during radiography). The facility manager directed facility personnel to remove the shield wall and implement a program for operations personnel to perform personnel sweeps before any critical assembly, accelerator, or radiography operations are performed.

NFS has reported inadequate access control in several Weekly Summaries. Following are some examples.

- Weekly Summary 98-25 reviewed two events where personnel did not adhere to established radiography control requirements. A facility operator at the Savannah River Site entered a barricaded area where radiography was being performed. Investigators determined that inadequate communication between the radiography technician and the operator resulted in the operator incorrectly assuming he could pass through the barricaded area without an escort. Researchers at the Los Alamos National Laboratory Pajarito Laboratory failed to make proper notifications, post an exclusion area, or activate warning lights before conducting a radiography experiment. Two security officers posted in an unshielded area behind the building received a potential unattenuated dose of approximately 1 millirem. (ORPS Report SR--WSRC-TRIT-1998-0007 and ALO-LA-LANL-TA18-1998-0006)
- Weekly Summary 98-23 reported that an operations coordinator at the Brookhaven National Laboratory Alternating Gradient Synchrotron placed the synchrotron ring

in the beam-enabled state while a technician was still inside the ring. The gate watch mistakenly believed that the technician had signed out when he told the operations coordinator that all personnel were out of the ring, and the operations coordinator decided to forego a three-man sweep of the accelerator. The three-man sweep is required before placing the ring in the beam-enabled state. (ORPS Report CH-BH-BNL-AGS-1998-0003)

These events underscore the need for effective access control to areas where hazardous conditions exist and demonstrates the importance of a strong radiological control program for all radiation areas. In this event, the crew chief failed to ensure the security guard had exited the area because no procedures existed to ensure that personnel did not remain in the area. Therefore, defense-in-depth was lost.

Facility and radiation protection managers at facilities where operations of radiation-generating devices may occur should review their facility program compliance to ensure compliance with the following guidance.

- DOE O 5480.25, *Safety of Accelerator Facilities*, establishes safety program requirements specific to accelerator facilities that provide a level of safety comparable to that required of nuclear facilities and ensures that accelerator facilities give full consideration to potential safety and health impacts in their design, operation, modification, maintenance, and compliance with applicable federal and state statutes.
- DOE/EH-256T, *Radiological Control Manual*, chapter 3, part 3, specifies entry and exit requirements for radiation areas. Article 334 requires physical controls to prevent inadvertent or unauthorized access to high- and very-high-radiation areas. Appendix 3B sets forth physical access controls for high- and very high-radiation areas. Article 365, "Radiation Generating Devices," specifies the requirements related to operation and control of radiation generating devices. It requires stringent physical and administrative control of sources to prevent over exposure of operating and support personnel and those in adjacent work areas. Article 365 incorporates related requirements by reference to the following documents: (1) DOE O 5480.4, *Environmental Protection, Safety, and Health Protection Standards*; (2) ANSI N43.3, *American National Standard for General Radiation Safety – Installations Using Non-Medical X-Ray and Sealed Gamma-Ray Sources, Energies up to 10MeV*; (3) ANSI N43.2, *Radiation Safety for X-Ray Diffraction and Fluorescence Analysis Equipment*; and (4) 10 CFR 34, *Licenses for Radiography and Radiation Safety Requirements for Radiographic Operations*.

KEYWORDS: access control, procedures, radiation protection

FUNCTIONAL AREAS: Radiation Protection, Procedures

2. OPERATIONAL SAFETY REQUIREMENT VIOLATION FOR MATERIAL-AT-RISK

On July 8, 1998, at the Rocky Flats Environmental Technology Plutonium Fabrication Pyrochemical Operations Facility, a facility manager reported an operational safety requirement violation of the facility material-at-risk limit. Material-at-risk is exposed material (plutonium and americium) that could be released to the atmosphere during an accident. An engineer conducting a routine review discovered that various calculation errors resulted in the accounting of material-at-risk being underestimated and reported the errors to the facility configuration control authority. The facility manager terminated nuclear operations in the affected areas after discussions with DOE facility representatives. The facility manager also directed facility personnel to perform an inventory of material-at-risk. They determined that the amount of material-at-risk present in the facility may have exceeded the limit for an extended period of time. Facility personnel relocated some material to another facility to ensure current material-at-risk levels are within the operational safety requirement limit. Although no dose consequences resulted from this event, failure to properly account for material resulted in an operational safety requirement violation and could result in an unreviewed safety question. (ORPS Report RFO--KHLL-PUFAB-1998-0048)

Investigators determined that material-at-risk is calculated and entered into a log whenever material is moved in the facility. They stated that the calculation errors were both mathematical and conceptual in nature and that they believe these errors may show an incomplete understanding by facility personnel who performed the calculations. They also determined that the facility manager directed facility personnel to perform a walk-down to determine if the actual amount of material-at-risk present in the facility violated the operational safety requirement. Investigators determined that personnel identified material-at-risk during the walk-down that was unaccounted for in the material-at-risk log. Investigators determined that all special nuclear material was accounted for in the safeguards and accountability network, but it was not accurately reflected in the material-at-risk log. Investigators determined that errors in accounting for material-at-risk may have placed the facility in an unanalyzed condition. The operational safety requirement limit is based on 0.15g seismic event that disperses material-at-risk. This limit ensures that off-site dose consequences remain below the 30-rem bone dose limit to a maximally exposed off-site individual.

The facility manager held a fact-finding meeting on this event and directed facility personnel to complete the following corrective actions.

- Implement a computerized material-at-risk tracking program and provide training for applicable facility personnel.
- Implement an operations order that requires independent verification of calculations before material transfers are performed and establishes an administrative control limit (lower than the operational safety requirement limit) for material-at-risk.
- Complete a baseline audit of the material-at-risk program.

The facility manager will continue to review this event and will determine further corrective actions as needed.

NFS has reported authorization bases violations in several Weekly Summaries. Following are some examples.

- Weekly Summary 97-39 reported that the Facility Plant Review Committee at a Hanford reprocessing facility reported an unreviewed safety question because ventilation system modifications (adding charcoal filters and replacing exhaust fans) made in 1969 were not in accordance with the safety analysis report. The committee agreed that the modifications would result in the collapse of the filters during a design basis fire leading to an unfiltered radioactive release through the main stack. The failure of the filters did not match the accidents in the safety analysis report. (ORPS Reports RL--PHMC-324FAC-1997-0010 and RL--PHMC-324FAC-1997-0014)
- Weekly Summary 96-51 reported that managers at the Oak Ridge site confirmed an unreviewed safety question for waste stored in a fissile material storage area. During a walk-through, licensing personnel found potentially hazardous, inadequately characterized, waste materials in a storage room. A hazards screening performed before the 1994 facility shutdown did not include the room or its contents. (ORPS Report ORO--LMES-Y12NUCLEAR-1996-0026)
- Weekly Summary 96-40 reported that operators at the Portsmouth Gaseous Diffusion Plant violated a procedure and used a cylinder stacker in a manner that caused an unreviewed safety question. The procedure required the operators to move cylinders using a crane, but the crane was out of service. The operators used a cylinder stacker instead. Engineers determined that operating the stacker near the uranium hexafluoride cylinders represented an unanalyzed hazard and could have resulted in a release of up to 20,000 pounds of toxic and radiological material if a cylinder had ruptured. (ORPS Report USEC--MMUS-PTSGENPLT-1996-0065)

These events illustrate the importance of ensuring that hazardous materials are adequately tracked to ensure facilities remain within their authorization bases documents. This event also points out the importance of independently verifying calculations that are used to maintain material within established safety limits. These reviews are necessary to ensure that no increased risk to the facility, facility personnel, or the public exists.

Facility managers should review the following information and should communicate the importance of ensuring that facility design bases are adequately reflected in authorization bases documents to facility personnel.

- DOE O 5480.21, *Unreviewed Safety Questions*, establishes program requirements to evaluate the impact of changing conditions that may affect authorization bases. It also ensures that DOE has the approval authority for changes that introduce new hazards and higher-than-approved risks to the public and facility workers. The Order states that the following three criteria are used to identify unreviewed safety questions when changes are made to the facility: (1) if the probability of occurrence or the consequences of an accident that is analyzed in the safety analysis report are changed; (2) if the possibility of an accident of a different type than analyzed in the report may be created; and (3) if the margin of safety, as defined in any technical specification, is reduced.

- DOE O 5480.23, *Nuclear Safety Analysis Reports*, states that it is DOE policy that nuclear facilities and operations be analyzed to (1) identify all hazards and potential accidents associated with the facility and the process systems, components, equipment, or structures and (2) establish design and operational means to mitigate these hazards and potential accidents. The results of these analyses are to be documented in safety analysis reports.
- DOE-STD-1073-93, *Guide for Operational Configuration Management Program*, provides program criteria and implementation guidance for establishing consistency among design requirements, physical configuration, facility documentation and for maintaining this consistency. This standard states that an effective configuration management program will increase the availability and retrievability of accurate information to support safe, sound, and timely decision-making related to facility design and operations.
- DOE/EH-0502, Safety Notice 95-02, "Independent Verification and Self-Checking," in September 1995. This notice provides guidance and good practices for performing independent verification. Safety Notice 95-02 can be obtained by contacting the Info Center, (301) 903-0449, or by writing to ES&H Information Center, U.S. Department of Energy, EH-72, Suite 100, Century XXI, Third Floor, Germantown, MD 20874. Safety Notices are also available on the OEAF Home Page at http://tis.eh.doe.gov:80/web/oeaf/lessons_learned/ons/ons.html.

KEYWORDS: operational safety requirement, calculations, unreviewed safety question

FUNCTIONAL AREAS: Licensing/Compliance, Configuration Control, Technical Support

3. PCBs DETECTED IN RAW-WATER STORAGE TANK

On June 9, 1998, at the Idaho National Engineering and Environmental Laboratory, the Test Reactor Area Environmental, Safety, and Health manager obtained the results of raw-water storage tank pre-demolition characterization sampling of tank materials (paints and coatings) that indicated the presence of polychlorinated biphenyls (PCBs). Investigators determined that the PCBs were originally contained in a protective coating used on the inside surface of the 500,000-gallon steel, ground-level storage tank. No PCBs were detected in the water in the tank or downstream of the tank. (ORPS Report ID--LITC-TRA-1998-0007)

The raw water in the storage tank is used for firewater, demineralized water, and drinking water. Investigators determined that workers collected samples as a precautionary measure based on lessons learned from demolition activities at other facilities. They also determined that workers sampled water downstream of the storage tank in 1993, and analysts found no chemical contamination in those samples.

Acute toxic effects of exposure to PCBs include irritation of the eyes, nose, and throat. Chronic effects may include shortened lifespan, reproductive problems, liver damage, and nervous system damage. The Department of Health and Human Services has determined that PCBs may reasonably be anticipated to be carcinogens. The Environmental Protection Agency has set a maximum contaminant level of 0.0005 milligrams of PCBs per liter of drinking water and requires that spills or accidental releases to the environment of 1 pound or more be reported to the agency.

Weekly Summary 95-21 reported that Lockheed Martin Energy Systems personnel submitted two lessons learned to the Lessons Learned List Server reporting the detection of elevated PCB levels in equipment at the Oak Ridge K-25 Site. Samplers found PCBs in fire water tank sludge and in grease from supply fans and motor-operated valves. PCBs found in the tank sludge originated in the tank coating. Tank-wall corrosion products, along with the coating, contributed to the sludge content. (DOE LL List Server L-1995-OR-LMESK25-0501, 0503)

This occurrence illustrates the importance of incorporating lessons learned as part of thorough pre-job planning. Planning should include hazard analysis of all anticipated work activities. As the DOE complex increases activities involving decontamination and decommissioning, using workers who are less skilled and unfamiliar with facility hazards, job planning and lessons learned will take on added significance because the potential for personal injury, contamination, and environmental release will also increase.

Managers and supervisors in charge of job planning should ensure that hazards associated with decontamination and decommissioning, remediation, and facility operations are identified. DOE facility managers should ensure that personnel understand the basics of work control practices and safety and health hazard analyses. Requirements and guidance for worker protection can be found in the following references.

- DOE O 440.1, *Worker Protection Management for DOE Federal and Contractor Employees*, states that the contractor must identify workplace hazards and evaluate the risk of associated worker injury or illness.
- DOE/EM-0142P, *Decommissioning Handbook*, March 1994, DOE Office of Environmental Management, Chapter 7, "Characterization," provides guidance for methods to develop sampling and analysis plans. Section 7.2.4 describes sampling and measurement characterization tools for solids, liquids, and gases. Chapter 10, "Dismantling, Segmenting, and Demolition," provides detailed descriptions of dismantling and segmenting techniques. Chapter 12, "Worker Protection," provides requirements for worker protection during decontamination and decommissioning activities. Although the handbook is not an active document (the Office of Environmental Management is revising it) it provides valuable guidelines that may be used until the revision is complete. The handbook states that worker protection is an important element of any project and divides worker protection issues into three categories: (1) protection from radiation; (2) protection from toxic and hazardous materials; and (3) protection from traditional industrial safety hazards. The handbook also states that DOE decommissioning activities may combine hazards not commonly encountered elsewhere (such as industrial safety hazards and radiological hazards) and lists OSHA regulations that apply to decommissioning, as well as key elements of a health and safety program. Section 12 of the handbook states that extra precautions are required for worker safety because hazards in the facility may be unknown and many activities are infrequently performed.

KEYWORDS: decontamination & decommissioning, hazard analysis, work planning

FUNCTIONAL AREAS: Decontamination and Decommissioning, Work Planning

4. GOOD COMMUNICATION PRACTICES HELP IDENTIFY CONFINED SPACE ENTRY VIOLATIONS

This week OEAF engineers identified a good practice involving communication between site facilities. On July 7, 1998, at the Savannah River Site, H-Tank Farm operators notified F-Tank Farm operators during a daily conference call that they had identified a confined space entry violation that could also be occurring at F-Tank Farm. F-Tank Farm facility managers ordered a review of confined space permits and discovered that their operators had also violated confined space entry procedures. F-Tank Farm operators made four entries into a confined space while air piping in the space was under pressure in violation of procedural guidance in the site safety manual. Failure to follow confined space procedures resulted in operators being unnecessarily exposed to personnel health hazards. (ORPS Report SR--WSRC-FTANK-1998-0015)

Investigators determined that the site safety manual required operators to isolate air piping at greater than 30 psig and water piping at greater than 150 psig before entry into a confined space containing these piping systems. Operators stated that they were not aware of the requirements to isolate air and water systems. The facility manager requested that the department training group develop a briefing on confined space procedure requirements and work with operator personnel to develop lessons learned.

NFS has reported other events where lessons learned from one facility were applied to another facility. Following are some examples.

- Weekly Summary 96-30 reported that facility managers at the Oak Ridge Y-12 Plant reported potential structural degradation of the concrete floor in two buildings. Initially, personnel at Oak Ridge were alerted to the potential problem by a June 1995 Defense Nuclear Facilities Safety Board report of a similar condition at the Rocky Flats Environmental Technology Site. Managers at Oak Ridge used techniques learned at Rocky Flats to identify and correct the problem. (ORPS Report ORO--LMES-Y12NUCLEAR-1996-0017)
- Weekly Summary 96-13 reported that Analytical Development Section personnel at the Savannah River Technology Center had evaluated a yellow alert from the Lessons Learned List Server on a centrifuge failure. They did not have centrifuges of the type described in the alert, but they evaluated the information for generic implications. The corrective actions they implemented prevented injury when an operating centrifuge at their facility became unbalanced. (DOE Lessons Learned List Server Item Number 1996-SR-WSRC-LL-0002)

These events are significant because they illustrate the value of sharing lessons learned and applying them between facilities and sites. Sharing of lessons learned enables managers to recognize and respond to both good practices and potential dangers. Facility managers and training organizations should refer to the following references for guidance on good communications, lessons learned, and confined space requirements.

- DOE-STD-7501-95, *Development of DOE Lessons Learned Programs*, defines the framework for development of a lessons learned program. Managers should be familiar with the standard and implement elements that meet operational needs.
- DOE-HDBK-7502-95, *Implementing the DOE Lessons Learned Programs, Volumes I & II*, discusses how to implement an effective lessons learned program.

- DOE-STD-1031-92, *Guide to Good Practices for Communications*, discusses the need for clear, formal, and disciplined communications and provides guides to improve communications.
- DOE O 440.1A, *Worker Protection Management for DOE Federal and Contractor Employees*, requires all DOE elements to identify existing and potential workplace hazards and evaluate the risk of associated worker injury or illness.
- 29 CFR 1910.146, *Permit-Required Confined Spaces*, contains requirements for practices and procedures to protect employees from hazards of entry into permit-required confined spaces. The standard requires employers to develop and implement the means, procedures, and practices necessary for safe permit space entry operations. Appendix A provides a decision flow chart to assist personnel in implementing an effective confined space program. Appendix C provides examples of permit-required confined space programs.
- DOE/EH-0353P, *OSH Technical Reference Manual*, chapter 4, "Confined Space Entry," provides a checklist for employees and supervisors to follow. This checklist is available on the Internet through the DOE Environment, Safety and Health Technical Information Services. It is located at URL http://tis.eh.doe.gov/docs/osh_tr/otr.html.

KEYWORDS: confined space, hazard analysis, industrial safety

FUNCTIONAL AREAS: Industrial Safety, Lessons Learned

5. GLOVEBOX FALLS DURING MOVING ACTIVITIES

On July 7, 1998, at the Rocky Flats Environmental Technology Plutonium Processing and Handling Facility, a glovebox, internally contaminated with plutonium, fell and impacted the floor while decontamination and decommissioning workers were moving it into a size-reduction tent. The impact of the falling glovebox jarred an area fire phone, sending an alarm to the Central Alarm Station. Fire Department personnel informed the work authorization team manager of the event, and he directed a precautionary evacuation of the facility because he did not know if the fire alarms were operable. Fire Department personnel arrived at the scene and verified that the glovebox impact caused the phone to send the alarm and that fire alarms remained operable. Facility personnel confirmed that the glovebox was not breached, developed a lifting plan for the glovebox, and successfully moved it into the size-reduction tent. Investigators determined that the work package did not specify a method for workers to use when moving the glovebox. Investigators believe that inadequate welds, corrosion, and modifications workers performed on the glovebox legs contributed to the glovebox collapse. Although there was no release of contamination, the potential existed for personnel uptakes if the glovebox had been breached. (ORPS Report RFO--KHLL-779OPS-1998-0024)

Investigators determined that the glovebox was too tall to fit into the size-reduction tent, so workers removed the leg support braces and two legs from the glovebox, shortened the remaining glovebox legs, and attached wheel assemblies to roll it into the tent. However, when they moved the glovebox, one front wheel hit the metal lip, causing a leg to buckle. Investigators determined that while the job foreman was trying to find a support for the glovebox leg, a rear leg collapsed, and the glovebox fell approximately 18 inches. They also determined that (1) the workers deviated from standard methods of moving gloveboxes, (2) the work package did not specifically address methods for glovebox movement, (3) no one reviewed or approved the glovebox leg modifications or the method the workers used to move the glovebox, and (4) the job foreman did not contact the work authorization team manager to inform him of the event.

The facility manager held a fact-finding meeting on this event. Meeting attendees learned that facility personnel determined that the front glovebox leg had an inadequate weld and the leg interior (which is hollow) was rusted. They believed that this contributed to the collapse and subsequent fall of the glovebox. The facility manager directed facility personnel to complete the following corrective actions.

- Incorporate engineering hold points in work packages when deviating from standard moving techniques.
- Develop formal glovebox moving plans.
- Issue a lessons learned document on this event.

The facility manager also directed facility personnel to closely monitor facility glovebox moves.

NFS has reported inadequate work planning in several Weekly Summaries. Following are some examples.

- Weekly Summary 98-27 reported that site utilities workers at the Savannah River Site H-Area excavated soil to cut and cap a buried 3-inch domestic water line in close proximity to a radioactive waste transfer line without making required notifications or coordinating with appropriate facility operations personnel. H-Area personnel determined that work planners did not coordinate with H-Tank Farm and Defense Waste Processing Facility operations personnel, so no precautions were taken to isolate the line or otherwise protect workers from potential radiation hazards. (ORPS Report SR--WSRC-HTANK-1998-0018)
- Weekly Summary 98-25 reported that personnel investigating a tritium monitor alarm light at the Mound Plant Tritium Facilities discovered that decommissioning workers had cut the vacuum piping for the tritium monitoring system. Investigators determined that work planners did not identify utility boundaries and workers cut the tritium monitor pipes approximately 2 weeks before investigators identified the problem. (ORPS Report OH-MB-BWO-BWO01-1998-0009)

- Weekly Summary 98-17 reported that the DOE Office of Enforcement and Investigation and the Rocky Flats Environmental Technology Site integrating management contractor, Kaiser-Hill Company, entered into a Consent Order. DOE issued the Order as a result of an internal investigation of three events that occurred between January 1996 and January 1998. Investigators believed that collectively the events indicated significant weaknesses in the controls necessary to perform work safely. DOE elected to issue the Consent Order instead of pursuing possible enforcement proceedings because they determined that Kaiser-Hill investigated the events aggressively and comprehensively and implemented adequate corrective actions to prevent recurrence. Kaiser-Hill agreed to remit \$100,000 in recognition of the programmatic work planning and control problems identified as a result of internal investigations. (NTS Reports: NTS-RFO--KHLL-ENVOPS-1997-0001; NTS-RFO--KHLL-SITEWIDE-1997-0009; NTS-RFO--KHLL-371OPS-1998-0001; ORPS Reports: RFO--KHLL-ENVOPS-1997-0001; RFO--KHLL-371OPS-1998-0004; and Letter, DOE (P. Brush) to Kaiser-Hill Company, L.L.C. (R. Card), 4/14/98)

These events illustrate the need for facility managers to ensure that all personnel are made aware of the need for stringent work controls. This event might have been prevented if personnel who prepared the work package had included specific moving instructions in the work package or provided instructions on who to contact for approval before deviating from standard moving plans. This would have allowed engineers to evaluate the glovebox modifications and develop an adequate work plan. In addition, the workers failed to realize the potential consequences had the glovebox been breached. This indicates that no one informed the workers of the potential hazards involved. Decommissioning procedures or work packages should identify all potential hazards and instructions for equipment removal. Workers should also be aware of required actions and notifications that are expected by facility managers when events occur.

Managers at DOE facilities should review their programs to ensure that workers understand their responsibilities and obligations and that personnel understand the basics of work control practices, work planning, and radiological hazards.

- DOE O 440.1A, *Worker Protection Management for DOE Federal and Contractor Employees*, states that the contractor must identify workplace hazards and evaluate the risk of associated worker injury or illness.
- DOE O 4330.4B, *Maintenance Management Program*, section 8.3.1, provides guidelines on work control systems and procedures. The Order requires using control procedures to help personnel understand the requirements for working safely. Chapter 6, "Maintenance Procedures," identifies maintenance procedures and other work-related documents needed to provide appropriate work direction and ensure that maintenance is performed safely and efficiently. Chapter 8, "Control of Maintenance Activities," states that a work control program establishes the requirements for identifying, planning, approving, and conducting maintenance activities.
- DOE/EH-0256T, *Radiological Control Manual*, states: "Each person involved in radiological work is expected to demonstrate responsibility and accountability through an informed, disciplined, and cautious attitude toward radiation and radioactivity." The manual sets forth DOE guidance on the proper course of action in the area of radiological control.

- DOE-STD-1050-93, *Guideline to Good Practices for Planning, Scheduling and Coordination of Maintenance at DOE Nuclear Facilities*, section 3.1.1.3, provides the key elements of an effective planning program. The standard also discusses the need for thorough reviews of work packages by experienced individuals to eliminate errors.

KEYWORDS: work planning, procedures, radiation protection

FUNCTIONAL AREAS: Work Planning, Radiation Protection, Procedures

OEAF FOLLOW-UP ACTIVITY

1. CORRECTION TO WEEKLY SUMMARY 98-26, ARTICLE 1

Article 1, "Loss of Radioactive Check Source" in Weekly Summary 98-26 incorrectly stated that sanitary workers employed by a private sanitary waste company transported the lost source to an off-site landfill. The article should have stated that facility personnel believe there is a possibility that it was transported to the landfill. Facility personnel are continuing their search for the missing source.

KEYWORDS: sealed source, accountability, radiation protection, landfill

FUNCTIONAL AREAS: Radiation Protection